

ELK VIEWING FROM ATOP A HORSE-DRAWN SLEIGH

UTAH DIVISION OF WILDLIFE RESOURCES • WINTER 2006

wildlife

R E V I E W

'Tis the season

For upland game hunting

Eagle watching

*Creating memories
that last a lifetime*



Wildlife Review

Utah Division of Wildlife Resources

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pose for a photo after a day hunting pheasants on
public ground near Utah Lake. Photo by Scott Root.

Large photo at right: Mule deer bucks in the foothills
of the Oquirrh Mountains. Photo by Doug Peterson,
MoosehollowOutdoors.com.

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"Come visit
Hardware
Ranch and
see these
magnificent
animals
up close from
atop a horse-
drawn sleigh."

DIRECTOR'S MESSAGE



THANK YOU for picking up this issue of the *Wildlife Review*. This issue includes several articles about wintering wildlife and winter wildlife recreation. Dan Christensen's excellent article about Hardware Ranch encourages people to come up to visit the ranch to learn more about the life history of Rocky Mountain elk and actually see these magnificent animals up close from atop a horse-drawn sleigh.

I spent most of my career working with big game. Since the 1970s, we have worked especially hard to establish healthy, huntable elk herds throughout the state. Thanks to the efforts of dedicated, professional Division of Wildlife Resources personnel and concerned sportsmen and women of the state, we have succeeded in that beyond our wildest dreams and are now ranked near the top in western America for trophy bull elk.

That's why I understand and appreciate the value of an outstanding facility like Hardware Ranch as both a management tool and an educational opportunity. I've learned through the years that people value and appreciate what they know and understand far more than the unknown. A big part of our job is educating people about the value of big game animals like elk—not just for hunting, but also for watching, photographing and for their intrinsic value as native wildlife species linked to our history and culture. That's what Hardware Ranch is all about. I hope you and your family have a chance to visit the ranch this winter and see these majestic animals for yourselves. Best wishes to you and your family this holiday season.

James F. Karpowitz

UDWR Director

BY SCOTT ROOT

Central Region Conservation Outreach Manager



'Tis the season

... for upland game hunting

The holiday season is one of the things I love most about the winter months. It's a time to eat turkey, give gifts and show acts of love.

And for me, the holiday season is definitely a season of love: especially a love for upland game.

I love the fact that Utah has many "late-season" chances to get into nature and enjoy upland game hunting. And I love the diversity of upland game available in the state. These birds and animals include pheasant, quail, chukar partridge, Hungarian partridge, blue grouse, ruffed grouse, sharp-tailed grouse, cottontail rabbit and snowshoe hare.

The term "late-season" refers to the months of November, December, January and February. These months provide landscapes that are colorful and often snowy. I usually have the forest, field, wetland or desert all to myself, and that makes my hunting experience even better.

I also love the fact that I can find many of Utah's upland game species on public land. And a new Walk-In Access program in northern Utah is starting to open more private land to public hunters (to learn more about the program, visit wildlife.utah.gov/walkinaccess on the Web).

I love the taste of upland game and trying new ways to prepare these well-earned meals. (However, I must admit

that after one taste of sage grouse, I decided to photograph them rather than eat them!)

The rest of the upland game species are absolutely delicious, and yes, several species do taste like chicken, and even better.

Good dogs help

I love it when I pull up to my house after work and my two yellow Labrador retrievers whine twice as loud as they normally do. They know it's "bird season" and that they might be going on another

hunt.

I also love this season because I become a very popular guy. My friends know I have two hunting dogs, and they come out of the woodwork in the winter. I really don't mind it because it's safer to hunt with another person, and I love getting others addicted to hunting.

One of the pleasures I enjoy the most is watching my two furry friends work together as they perfect their instincts for finding game.

My dogs live for hunting. I love it when they see me walk into the backyard



The author with his prized pair of catches and prized pair of pooches.

with my hunting coveralls on, and they go nuts. They recognize the coveralls, and they know what the coveralls mean. Before I can say "Let's go hunting!" they've run past me and have placed their paws on the back of my truck, waiting for me to let them in the shell. I tell my wife that all of the holes dug in the backyard and the "dog sausage" left on the lawn are worth it because of the love the dogs have brought to our family and the game they've provided for our dinner table.

I also tell my wife that hunting is part of my weight-loss program. She didn't buy off on that for awhile, but she now realizes that statement is very accurate. Many people spend the late season months immobile and gain lots of weight.

The negatives

Even with all of the positives, there are some negatives to being an upland game fanatic. For example, my family and extended family know that I'll be late for Thanksgiving because of my passion for a morning upland game hunt before the big feast. They also know that my Christmas gift-giving skills will be limited, since I'm usually hunting on the big "Day After Thanksgiving Sales Day" and on most of the days when I'm not at work. I usually end up buying them sub-par gifts right before Christmas.

My family is forgiving when I take advantage of the Division of Wildlife Resources' Web site (wildlife.utah.gov) and buy a new fishing or combination license for them, however. (If you decide to give a license as a gift, make sure the person you're giving it to doesn't already have a current license).

DWR lands book

You must obtain written permission to hunt on private land, and it's a good idea to obtain that permission way before the hunt.

If you're too timid to ask for permission, or you've asked in the past but have struck out, the DWR has a publication



SCOTT MOOT

Pheasant hunting is better in the solitude after the opening day of the hunt.

titled *Access to Wildlife Lands in Utah* that you might be interested in. The book costs \$9.95 and is available at all DWR offices.

The book includes maps for all of the lands administered by the DWR. Many of these are open to upland game hunting, including pheasant hunting, for 30 days. You'll also find information about the species found at each area, the activities permitted at each area and the lay of the land. The book is well worth the investment.

If you prefer not to spend \$10, the entire publication is available for free at the DWR's Web site. To find the book, click on the "Publications" selection on the home page.

Utah Upland Game is another great publication you can pick up at any DWR office. This free publication has information about every upland species in Utah and includes maps that show where you can find them. Other helpful information includes descriptions (with illustrations) of each of Utah's upland game birds and animals and information about their habitat, nesting, food and status in the state. The book also provides hunting tips for each species.

Upland game species notes and dates

Here are a few notes to help you plan a great late-season upland game hunting trip this year. Refer to the 2006–2007 *Utah Upland Game Hunting Guide* for specific regulations:

Pheasant

Utah's 2006 pheasant season opens Nov. 4 and runs until Nov. 19 across most of the state, but it ends early (Nov. 10) in Utah County. In some areas in Utah, the pheasant hunt runs for 30 days. Check the upland game hunting guide for specific information.

Many of the pheasant hunters in Utah think the hunt ends about an hour after the season opens. Not so! In my opinion, it's just beginning. After opening day, the crowds disperse and the fields are empty. Consider taking a day or two off work in the middle of the week, and enjoy hunting in solitude.

Quail

The 2006 quail hunting season runs Nov. 4–19 across most of Utah. The season runs until Dec. 31 in Duchesne, Uintah and Washington counties, however.

California quail are generally hunted on private lands, and many quail are found within city limits, where the discharge of firearms is not permitted. More and more quail are also being found on public lands, however, providing Utah's

Utah has many "late-season" chances to get into nature and enjoy upland game hunting.

hunters with a new and fun upland game hunting experience.

Gambel's quail are similar to California quail in size, but they're not as widely distributed across the state. In Utah, you'll find them in brushy thickets in the Mohave Desert and in irrigated agricultural regions in the lower elevations of southern Utah.

Chukar partridge

2006–2007 season dates for chukar partridge vary, but they're generally long. The chukar hunt runs Sept. 16 to Nov. 30 through most of the state, but in some areas it runs until Jan. 31, 2007. Check the upland game hunting guide for more information.

Chukar partridge are found throughout much of Utah. These hardy birds prefer steep, rocky, semi-arid slopes that have rabbit-brush, sagebrush, salt-bush or cheatgrass.

You'll often hear chukars before you see them, so keep your ears open for their distinctive call. If possible, it's best to get above the birds, and then hunt down the slope towards them.

Chukars are found mostly on public land. If you don't locate a covey in one canyon, move to an adjacent canyon or draw.

Many hunters enjoy hunting chukars later in the season. The temperatures are cooler then, and that makes hiking easier. Steep, rocky slopes are more slippery and

dangerous in cold and wet conditions, however, so use caution and never hunt chukars alone.

Hungarian partridge

2006–2007 Hungarian partridge season dates are similar to the chukar season. The Hungarian partridge season runs from Sept. 16 to Nov. 30 through most of the state, but in some areas you can hunt Hungarian partridge until the end of January. See the upland game hunting guide for more information.

Hungarian partridge, or "Huns" as they're sometimes called, are generally found in the northern and northwestern portions of Utah near grassland or near mixed sage and grass adjacent to cultivated lands. Finding good areas to hunt Huns, and then obtaining written permission from landowners, can reward hunters with a new hunting experience and a pleasing plate of partridge.

Hunters in northern Utah can also gain access to private lands through the DWR's new Walk-In Access program.

Blue and ruffed grouse

The 2006 season for blue and ruffed grouse ends on Nov. 30.

Blue grouse are commonly seen by deer hunters and hikers in stands of conifer or aspen trees at elevations ranging from 8,000 to 10,000 feet. The blue grouse is a large bird and can weigh up to 3½ pounds.

Ruffed grouse are also mountainous birds, but they prefer brushy woodland areas next to streams and springs. Ruffed grouse tend to flush a lot more explosively than blues do.

Snowshoe hare, cottontail rabbit and jackrabbit

These three rabbit and hare species offer the longest upland game hunt in Utah. The season for snowshoe hare and cottontail rabbit runs until Feb. 28, 2007. Jackrabbits are not protected in Utah and may be hunted without a license throughout the year!

Snowshoe hares are the most difficult of the three to find. You'll usually find them in higher mountainous areas—in coniferous forests that are interspersed with thickets of aspen, willow and alder. Their fur turns white in the winter, which makes them difficult to spot.

Cottontails are widely distributed across Utah. You'll find them in areas ranging from the desert to the lower slopes of mountains. During the winter, their fur remains grayish or brownish in color.

Look for cottontails in brushy areas along steam courses or dry washes. You'll often find them in the same habitat as jackrabbits.

Turkey

Although the 2007 wild turkey hunting season doesn't happen until next spring, applications are accepted from Nov. 28 to Dec. 26, 2006. Check the DWR's Web site for more information and make sure you get your application in before the Dec. 26 cut-off date.

Get out and have some fun!


Don't be among those who choose to "hibernate" this winter. Take advantage of a late-season upland game hunt. If you do, you'll enjoy a diversity of upland game without the crowds, scenic beauty, weight loss, bonding with friends and family, and some of the best table fare you'll ever eat.

To learn more about Utah's upland game, or to purchase a license, visit the DWR's Web site at wildlife.utah.gov and have fun this winter! 🍖

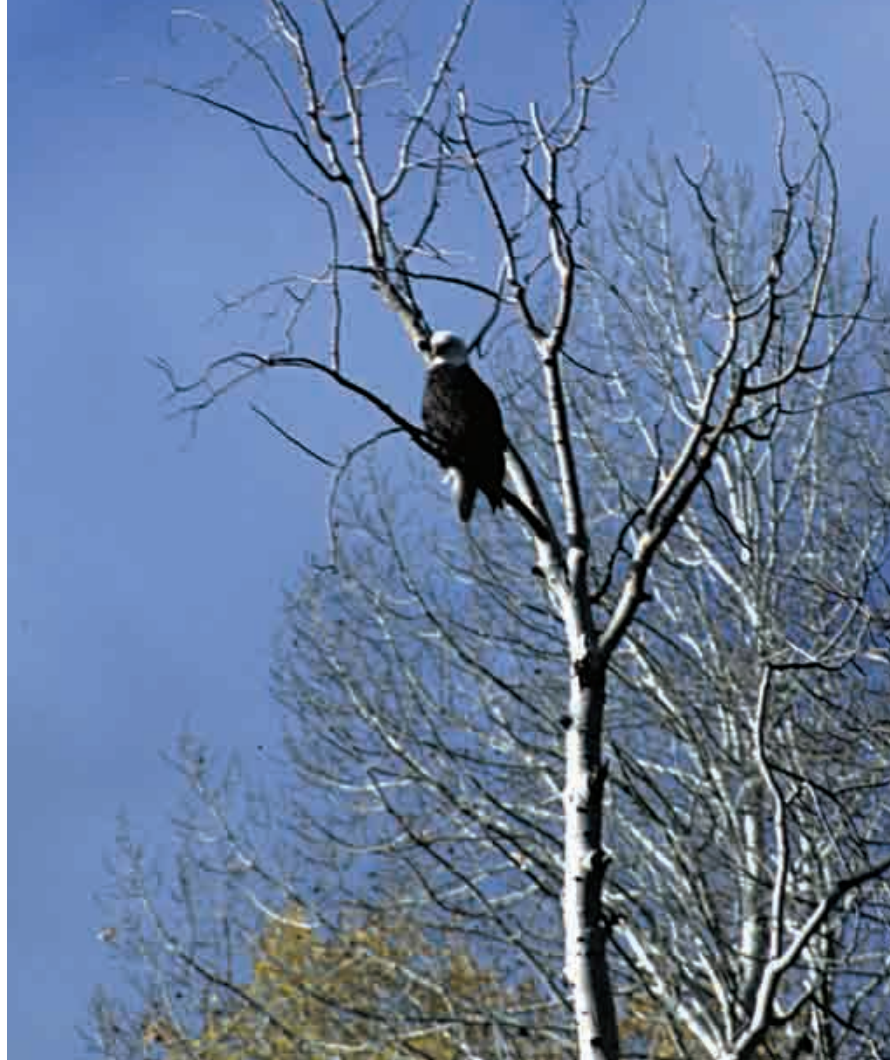


SCOTT ROOT

Keep your ears open for the distinctive call of chukar partridges.



Utah is at a very favorable latitude for wintering bald eagles, and the state receives hundreds of birds in the winter. An annual celebration, called *Bald Eagle Days*, is held each February during the peak visiting season.



By BOB WALTERS

Watchable Wildlife Coordinator

Eagle watching

Creating memories that last a lifetime

A co-worker recently asked me, "What sparked your interest in bald eagles and eagle watching?"

As I thought about my passion for viewing eagles, several memories flooded my mind.

The first took me back to the mid-to late 1960s and a soggy walk to an eagle nest during a low point in a family

fishing trip at an Ontario lake. I saw a huge nest from our boat, and I wanted to investigate it. I had never seen a nest that large and imposing—its size alone made me want to get as close to it as I could.

After considerable trudging through knee-deep water and downed timber, and being attacked by a squadron of biting mosquitoes, I finally found myself within a few feet of the huge nest tree. As I craned my neck to view the nest, a magnificent adult bald eagle vaulted off the nest and a hail of branches and twigs rained down on me. I quickly realized that I was disturbing the bird, and I trudged back to the boat to tell my family members about the experience.

There's no question that I should not

have gotten as close to the nest as I did, but the adult eagle bolting off the nest and shower of branches raining down on me made the moment unforgettable.

Later, during my college years in the mid-1970s, I vividly recall observing the power, grace and efficiency of wintering bald eagles that were fishing on the Wisconsin River.

Watching from a vehicle atop a high bluff, the place below me appeared to be filled with eagles of all ages. I could see adult birds with their white heads and tails, and sub-adult and juvenile birds exhibiting their curiously mottled and blotchy plumages. Eagles were on their feet on the shore, on the ice and were even standing in the water. Many were



LYNN CHAMBERLAIN

Golden eagles are a second eagle species commonly seen in Utah.

perched on nearby leafless trees. With regularity, a bird would swoop out of the trees and down to the water, skimming along its surface to neatly snag a hapless fish that it would then return to its perch to feast on.

One of my favorite memories happened in the spring of 1996. At that time, I was checking on a pair of adult eagles that were near an old great blue heron nest that was located atop a snag some distance from the Great Salt Lake. Only

a short distance from my Salt Lake City office, I regularly enjoyed watching bald eagles at the site in the winter, and one day I counted 82 of them. (Unlike most birds of prey, bald eagles are highly social. A roost can contain 25 or even 50 eagles. Recent reports of more than 400 foraging birds have been tallied at the Farmington Bay Waterfowl Management Area.)

On this particular day, I saw something out of the ordinary—one of the eagles was prone on the heron nest. Vet-

eran eagle watchers know that whether eagles are loafing, preening or roosting, perched eagles always appear ramrod straight and vertical, exhibiting a straight-shouldered appearance.

I made daily visits to try and verify what I suspected—that the eagles were attempting to hatch an eaglet, a feat eagles hadn't accomplished in that area in 68 years.

As I squinted through my spotting scope at the nest and the prone adult, from a vantage point about 800 yards away, I still recall the words I wrote in my notebook: "A pale, white form passed in front of the dark brown chest of the prone adult." Hours of watching verified that the pair had indeed hatched out two young!

You can catch the passion too

These experiences and many, many more have fueled a passion for eagle watching that continues within me to this day. Experiences like these can spark an interest in any person, of any age, since what you're observing is not choreographed, staged or remotely controlled, like so many things are in our technologically driven human world today. What you'll observe are living birds doing what only eagles can do.

The key to any successful wildlife watching experience is to get into the areas where the species you're looking for visit and live. Fortunately, Utah is at a very favorable latitude for wintering bald eagles, and the state receives hundreds of birds in the winter.

Utah's annual Bald Eagle Day viewing locations are a good starting point. Eagles tend to congregate at each of these sites during their November to March wintering period. In February 2006, Bald Eagle Day sites included the Salt Creek Waterfowl Management Area (WMA) northwest of Corinne; the Farmington Bay WMA west of Centerville; the Fountain Green State Fish Hatchery east of Nephi; the Split Mountain/Green River area north of Jensen; and the Cedar Valley area northwest of Cedar City.

As far as timing, the date of the one-day Bald Eagle Day celebration, which is usually held the first Saturday in February, coincides with the time when

the highest number of wintering bald eagles is visiting the state. Opportunities to watch eagles at these locations abound throughout their wintering period, however.

Some additional sites are also worth checking out. They include the Bear River Migratory Bird Refuge, the Ogden Bay WMA, the Henefer area along the Weber River, the mouth of Ophir Canyon, Rush Lake south of Stockton and the Fairfield-Vernon areas. The number of eagles you'll see at any viewing site varies from year to year, and that's probably due to the amount of prey available to the eagles at each site.

Some additional bald eagle viewing sites are listed below. These sites came from the excellent, three-part Birding Trails series of the *Best Viewing Spots in Utah* written by Keith Evans. These maps are available for \$2 each at any Division of Wildlife Resources office.

Bald eagle viewing sites

"Great Salt Lake Birding Trails" (published in 2001)

- Bear River Migratory Bird Refuge
- Willard Bay State Park
- Antelope Island State Park and causeway
- Morgan-Henefer Trail
- Lake Mountain Raptor Loop

"Southwest Utah Birding Trails" (published in 2004)

- Minersville Reservoir
- Otter Creek Reservoir

"Eastern Utah Birding Trails" (published in 2006)

- Little Hole
- Browns Park
- Stewart Lake
- Pelican Lake
- Ouray National Wildlife Refuge
- Westwater
- Colorado River Scenic Byway

Eagle viewing tips

1. Foggy days can make trying to watch eagles a frustrating experience! To maximize your eagle watching experience, wait for the skies to clear.

2. Don't neglect to look overhead: the human tendency is to look straight ahead and side-to-side only. Look up and out over the water, and up toward the mountains. If you look in these directions, you might see eagles on reconnaissance flights, locking talons in pre-nesting season pair bonding maneuvers or soaring to higher elevation roosts.

3. Put in the time to watch for interactions between eagles, particularly when two or more are on the ground or the ice, vying for the same morsel of food. Eagle antics at the "dinner table" can be as much fun to watch as the antics your children or your pets provide! 🦅



Views like this one are common at the Farmington Bay Waterfowl Management Area, a popular rest stop for eagles.

Hardware Ranch



Nearly 60 years ago, the federal government gave Utah a gift that has endured for generations.

Hardware Ranch was created as a wildlife refuge to feed the large numbers of elk that routinely move off the mountains in the winter to eat crops in the Cache Valley.

That elk-feeding mission remains at

the ranch to this day, but the ranch also offers much more.

Hardware Ranch

The 14,400-acre ranch is actually a consolidation of several early homesteads at the head of Blacksmith Fork Canyon near Logan. Blacksmith Fork and the canyon areas that surround it were critical to the early settlers. These areas pro-

vided the settlers with timber and large rocks that they used to build homes, barns and tabernacles in the valley below. It was also a rendezvous site for trappers and a main trail for travelers, including the Shoshone Indians.

Although it was originally established as a wildlife refuge, Hardware Ranch has been redesignated as a wildlife management area. That change is signifi-



Elk viewing and so much more

BY DAN CHRISTENSEN

Hardware Ranch Wildlife Management Area Supervisor

cant because it's allowed the Division of Wildlife Resources to build and sustain a unique education and outreach program while continuing to meet the ranch's charter to feed elk in the winter.

The ranch also provides excellent hunting and fishing and serves as a corridor to public lands in an area where much of the land is privately owned. More than 90 percent of the budget that

supports the ranch comes from hunting and fishing license fees paid by hunters and anglers. Many local and national conservation groups also sponsor or support wildlife and outreach programs at Hardware.

While winter is usually not a peak season for fieldwork at the ranch, wildlife monitoring and evaluation does continue. Every January, several cow elk are lured into specially constructed pens. Once they're inside the pens, biologists test them for disease and assess their general body condition. The information gathered during these annual evaluations, which have been done at Hardware for decades, represents one of the longest assessments of elk in the nation and has been used to

make management decisions about wildlife and habitat.

Horse-drawn sleigh rides

The first horse-drawn sleigh rides to take people among the elk herd that feeds in the ranch's large, snow-covered meadow, began in the winter of 1946, shortly after the federal government deeded the newly created refuge to the state of Utah. The popular rides, among more than 500 head of wild elk, have run ever since. Each winter, from mid-December through mid-March, about 50,000 visitors come to the ranch to see the wintering elk, explore the ranch's visitor center, eat authentic Dutch oven food and enjoy the crisp, clean winter air.

The ranch's Saturday night 'moonlight sleigh rides' are a very popular winter event. The rides begin at dark and allow participants to spotlight the elk or simply sit back under the stars and watch as the night unfolds on the meadow and mountains around them. It's a cold and fun date, with subzero temperatures that put ice crystals on eyelashes.

Following the sleigh ride, a prime rib Dutch oven dinner is served in the visitor center. The dinner includes all of the hot chocolate or coffee needed to restore feeling to your fingers and lips, and culminates with caramel or chocolate layer cake.

Adding to your winter fun

Utah's heritage continues to be emphasized in the programs at Hardware Ranch. For example, a major recreational trail that runs through the ranch is named for the Shoshone. Each year hundreds of people ride off-highways vehicles and snowmobiles over the nearly 200 miles of designated, groomed trails that are attracting visitors to the ranch from across the nation.

Located less than two hours from Salt Lake City and the famous ski areas along the Wasatch Front, Hardware Ranch is becoming a popular day trip for visitors to the state. The ranch adds to their skiing and winter vacation by offering an easily accessible, affordable, family-oriented opportunity to view wildlife in a unique setting. The guided trips into the

elk herd put visitors within a few feet of big bulls as sleigh drivers talk about the elk and the heritage, biology and other wildlife and habitat programs the ranch offers.

Visitors find that the Cache Valley, located only 20 miles from the ranch, offers all of the amenities of a town, while retaining a clean, rural charm. The valley includes more than 850 motel rooms, major restaurants and a very respectable theatre and opera schedule. Beaver Mountain is a small, wonderful surprise of a ski area about 30 minutes up Logan Canyon. Several businesses are available where you can rent snowmobiles and all the winter gear you may need.

Plenty to do in the winter

Lately other activities, including snowshoeing, Nordic skiing and dog sled racing, have been added to the popular snowmobiling activities at the Hardware Ranch trailhead. In 2005, the first dog sled race at the ranch began in the ranch's barnyard and ran for miles over the Shoshone Trail. The number of winter sports activities might increase, too, as local winter sports clubs have proposed formalizing and maintaining tracks and facilities at the ranch for public use.

Winter fishing is also a well-kept secret on the Blacksmith Fork River, a pristine river that is icy, but never freezes. While winter temperatures can drop to sub-zero and stay there, it's far more likely that a frigid morning will moderate in the afternoon, with temperatures reaching into the 40-degree range. The river is easily accessible, and the trout in this "blue ribbon" river even seem to fight a little harder when there's three feet of snow on the ground!

Wildlife viewing is also a popular activity at Hardware Ranch as elk and many other species move down to transition and winter ranges to escape the deep snow and brutal mountaintop temperatures at higher elevations. Migrating bald eagles share cliffs and trees with resident golden eagles; waterfowl fly through the steep passes and pause on the river and ponds; moose appear from the pines and marshes; and hundreds of other animals, which usually seem to blend into the landscape, are more visible on the white snow.

School programs

Education and outreach programs begin in January, and thousands of Utah students come to the ranch to see the elk and draft horses and to learn about the heritage, wildlife and habitat that makes Hardware Ranch a special place. During their visits, they often catch a glimpse of the moose in the marsh along the river, the coyote that prowls just off the meadow or the flock of wild turkeys that strut up Curtis Creek. The Project WILD program, which supports the Utah core science program for 4th graders, is also

taught at the ranch.

Over the past two years, the ranch has formed partnerships with several organizations in an effort to extend education and outreach year round. In 2006, the first American West Heritage Center handcart treks ran across the ranch, and the ranch also began a partnership with the Bear River Migratory Bird Refuge in Box Elder County. Both programs provide opportunities to reach new audiences in a unique setting. The Bear River Refuge partnership adds 800 students to the 4,500 already taught at the ranch each year, and the handcart treks will add more than 1,000 people annually to the ranch's formal outreach programs.

How you can help

I am often reminded that places like Hardware Ranch are hard to find—and harder yet to preserve. Enthusiastic visitors sometimes ask me what they can do to help the ranch and its programs. In days of dwindling budgets, increasing overhead and competition for scarce free time, perhaps the best support you can provide is to visit the ranch and see what it has to offer. 🐾



Horse-drawn sleigh rides take visitors among the elk herd that feeds in the ranch's large, snow-covered meadow.

Visit our Web site for
more information:
hardwareranch.com



BY RON STEWART

Northeastern Region Conservation Outreach Manager
Mammals Program Coordinator

Ice fishing?

Do people really fish for ice?

I can still remember the first time I asked my sons if they wanted to go ice fishing.

"Ice fishing? Do people really fish for ice?" my youngest asked.

"Sounds real cold," the oldest said. "Don't fish hibernate or something when it gets that cold?"

I then had to explain that ice fishing is for "real fish" and "no," even though fish are cold blooded and do slow down considerably, they still remain active under the ice.

A fun activity everyone can enjoy

While it's still relatively new to Utah, ice fishing is a winter activity that's growing in popularity across the state. As long as you take a few precautions, it's an activity everyone can enjoy. Even though my boys were a bit skeptical the first time they went ice fishing, they found that they really enjoyed it.

The questions my boys continued to ask helped me realize that the biggest obstacle to an enjoyable ice fishing trip is getting ready to step onto the ice. "What clothes do I need?", "What equipment should I bring?" and "Is the ice safe?" were important questions that had to be answered correctly for us to have a fun and safe trip.

Keeping warm

Dressing warmly is critical to a fun ice fishing trip, but dressing warmly isn't as difficult as it sounds.

The first tip is to dress in layers. The second is to remember that wool and man-made acrylic fibers, such as fleece, retain more warmth if they get wet than absorbent fibers, such as cotton, retain if they get wet.

Dressing then should start at your skin, with lightweight socks and underwear. Heavier socks, pants, shirts, sweaters or fleece coats should then be added, followed by a wind resistant outer shell, such as bibs, coveralls and a winter parka. Boots, a hat, sunglasses, earmuffs and gloves—preferably all waterproof and insulated—and sunscreen on your exposed skin will finish out your outfit.

The advantage of layering clothes is that you can add or remove your clothes as needed. First-time anglers often find that they dressed more heavily than they needed to, but it's wise to be prepared for the worst. Dressing in multiple layers allows you to be prepared for both warm and cold conditions.

One last thought about clothes: ice anglers need to be able to move about in all those layers. "Warm, comfortable" and "freedom of movement" are the fashion buzzwords for ice fishing. Try to find clothes that provide all three.

Another thing that helps keep ice anglers warm, and makes the experience fun for smaller anglers, is to bring along



RON STEWART

While still relatively new to Utah, ice fishing is growing in popularity.

hot chocolate and lots of treats. Food and drinks will help keep you warm, and it's fun to have something special to eat. Plan on bringing lunch and other meals, and make sure plenty of treats are available for snack time.

Gear

The fishing equipment needed for ice fishing is relatively simple: a pole, a reel with line and brightly colored jigs, ice flies or lures, or a hook and bait. You can also add bait to your fly, jig or lure to attract more attention to it.

If a pole and reel works, then it will work for ice fishing. No special equipment is needed, although many experienced anglers use a really short pole and reel, which is easier to hold over a small hole in the ice. A quality ice fishing pole and reel can usually be found for less than \$30.

Two additional pieces of equipment also are essential: a way to cut through

the ice (usually an ice auger) and a large spoon or ladle to clean pieces of ice out of the hole you drill. I don't recommend using chainsaws, although I've seen them used to cut a nice hole in the ice. The problem with a chainsaw is that they can splash water on the handler, and those around him, as they cut all the way through the ice.

Many ice anglers carry their gear in a bucket, which they can also flip over and use as a seat. I've found a small sled is a great item to have, as pulling your gear to your fishing spot can be easier than trying to carry it in a bucket. The sled has also allowed me to take a cooler and extra clothes on our trips and has provided a place for a tired ice angler to curl up and sleep. It can also be turned into a fun toy when the fishing is slow!

Ice

Ice fishing opens up the entire lake to anglers because they can travel to any

spot where the ice is safe. As you travel across the ice, remember that clear ice is stronger than cloudy ice.

Safe ice starts at about two inches. While I've been told two inches of clear ice will support my weight, I've never been inclined to test it. I usually wait for the ice to get at least six inches thick, but I have walked to areas that were not that thick, and I have found that the ice was quite stable.

As a general rule, four inches of ice will support a couple of people, six to eight inches will support a small party and 12 inches will support a larger group or a group with machines, such as snowmobiles. I've seen trucks out on 18 inches or so of ice. In the Great Lakes area, entire ice fishing villages spring up on the ice.

Another thing to keep in mind is that ice floats. This means if water is flowing into the body of water you're fishing on, the rising water will lift the ice up and away from the edges. This can create an unsafe edge of thinner ice. Also an ice sheet—with you on it—could be blown away from the bank, leaving you stranded.

You can usually avoid both of these situations by checking how thick the ice is along the edges before you venture out, and by watching the weather and being aware of your surroundings—especially late in the ice fishing season.

Techniques

If you've fished the lake before, start by drilling holes in your favorite spot. Also look for points, rocky slopes, edges of weed beds, flooded stream channels and anything else that might provide fish with structure.

As you're choosing your site, remember that the fish are no longer confined to the deep, cool places that they retreated to in the summer. In the winter they can be anywhere, including in water only a couple of feet deep. Drill a hole or two above your best guess, and clean out the remaining ice with a ladle or a large spoon.

The three main techniques ice anglers use are *jigging* (moving the hook or jig up and down), *dead-sticking* (leaving the hook suspended without moving it)

and fishing a hook just off the bottom of the water they're fishing.

Bottom fishing is done with a baited hook, while jigging and dead-sticking can be done with a baited hook or with weighted flies or lures (usually jigs) that may or may not be tipped with bait. (To *tip* means to add a small amount of bait to the hook of your lure.)

Small jigs, which are designed to show action when moved in an up-and-down motion, are the most common lures used by ice anglers.

Nightcrawlers, meal worms (also called ice-worms), salmon eggs and commercial baits are the most popular baits. (If you fish with bait, be prepared to keep the fish you catch. A fish is much more likely to swallow a baited hook, and that makes it a lot more difficult to remove the hook without killing the fish. Studies show that only 30 percent of the

fish caught on bait survive after they're released.)

In the winter, fish can be found at any water depth, and it's not uncommon

a fish to hit after 15 minutes or more, try a new hole. Remember that the fish might be schooling; just because they hit your lure or bait in one spot one day doesn't mean they'll be there the next.

I've met anglers who pick their spot depending on the day of the week. For example, some anglers believe fish move around their favorite reservoir on a seven-day cycle, so they fish all of the bays on the first day of the cycle to see where the fish are. Then they follow a

seven-day cycle, moving counter-clockwise around the lake.

Knowing when to leave

Ice fishing usually isn't a marathon sport. When your family or partners show signs of being cold or bored, it's time to go. It's much better to cut a day short, and leave with everyone still remembering the great times they had, than it is to extend the day out longer. 🐾

“EVEN THOUGH FISH ARE COLD BLOODED AND DO SLOW DOWN CONSIDERABLY, THEY STILL REMAIN ACTIVE UNDER THE ICE.”

to catch large fish in water that's only a couple of feet deep. A common technique is to drop your line a couple of feet down, and then jig it around a bit. If nothing strikes, drop it down a few feet more and jig it again. When your jig finally hits the bottom, try reeling your line in a few turns and then jig at that depth.

If jigging doesn't produce something, try dead-sticking by holding your jig as still as you can. If you still can't convince



RON STEWART

As long as a few precautions are taken, ice fishing is an activity everyone can participate in and enjoy.

BY DEAN MITCHELL

Upland Game Coordinator

AND RANDY LARSEN AND DANNY RAYMER

Utah State University and Brigham Young University Graduate Students

What the heck is a guzzler?

As you can imagine, it can be challenging to provide water to wildlife in the second driest state in the country. For more than 60 years, the Division of Wildlife Resources has met that challenge by constructing and maintaining devices known as *gallinaceous guzzlers*, *wildlife drinkers* or just plain guzzlers.

How does a guzzler work?

Guzzlers are contraptions that catch and store water from snow and rain. Guzzlers are built in areas where a lack of water is the major reason wildlife populations are not able to establish themselves and grow. The water stored in guzzlers is available to wildlife throughout the year,

You may have heard the term *wildlife guzzler* and wondered, “What the heck is a guzzler?”

The short answer is an important one to wildlife: guzzlers are devices that provide wildlife with something they can't live without—water.

Providing water for wildlife

Rain and snowfall varies widely across the United States, from a low of 2.3 inches per year in California's Death Valley to a high of 460 inches on Hawaii's Mount Waialeale. Nevada is the driest state in the country, receiving only 9.5 inches of annual precipitation, while Hawaii, at 70.3 inches, is the wettest.

Utah is the second driest state in the country, receiving only 11.86 inches of average precipitation annually.



RANDY LARSEN



RANDY LARSEN

Chukar partridges are picky about which guzzlers they'll use, and steer clear of those that lack sufficient shrub cover.

but it's especially important to them during the hot months of July, August and September.

Each guzzler has an apron. This apron is usually made of corrugated tin or sheet metal roofing. Snow and rain fall onto the apron, and then the water runs down the apron into a rain gutter, then into a downspout and finally into a storage tank. Guzzler storage tanks vary in size. Some are 350-gallon tanks that small animals, such as birds and rabbits, can walk into. Others are huge 10,000-gallon storage tanks that are buried underground and support herds of big game animals. Some specialized guzzlers, constructed in southern Utah for desert bighorn sheep, use the desert's slickrock as a collection apron.

Guzzlers that have underground storage tanks typically have an outlet pipe that the water flows through to reach a drinking trough. The trough usually has a

valve, similar to the valve in a toilet tank, which regulates the amount of water in the trough. As animals drink the water, the valve opens and allows more water to flow from the storage tank into the trough.

Guzzlers in Utah are constructed from all kinds of materials. Some small animal guzzlers are built using old *earthmover* tires. The guzzler is built by sealing the tire on one side, which allows water to be stored in it. Some big game guzzlers are made of butyl rubber. Biologists take the rubber and line a pond-like depression in the ground with it. Water is then stored in the depression and piped to a drinking trough.

Some guzzler tanks are constructed using expended rocket motor casings. Surplus military vehicle transmission boxes are even used to construct guzzler drinking troughs.

Some apron frames are constructed

of wood, but many of the newer guzzler frames are constructed of steel. The old wooden-framed guzzlers were often destroyed with the first wildland fire, but steel-framed guzzlers won't burn.

Biologists have tried to place guzzlers in areas where they'll benefit as many wildlife species as possible. In Utah's west desert, for example, guzzlers are placed in areas that will entice chukar partridge to come down out of the foothills to use them, while pronghorn can merely wander in from the valley bottoms for a drink. Doves and rabbits seem to gravitate to water wherever it's found.

Two research studies are underway in Utah to learn more about how guzzlers affect wildlife. Biologists want to know more about which wildlife species use guzzlers, what characteristics of guzzler placement entice more wildlife to use them and whether there's a difference in wildlife recruitment and survival in areas

Species photographed in western Utah using small (350-gallon) water developments

Birds

Blue-gray gnatcatcher (*Poliophtila caerulea*)
 Lark sparrow (*Chondestes grammacus*)
 Mourning dove (*Zenaida macroura*)
 Rock wren (*Salpinctes obsoletus*)
 Western meadowlark (*Sturnella neglecta*)
 Black-billed magpie (*Pica hudsonia*)
 Lazuli bunting (*Passerina amoena*)
 House finch (*Carpodacus mexicanus*)
 Sage thrasher (*Oreoscoptes montanus*)
 Black-throated sparrow (*Amphispiza bilineata*)
 Rock dove (*Columbia livia*)
 Chukar partridge (*Alectoris chukar*)

Mammals

Bobcat (*Lynx rufus*)

Antelope (*Antilocapra americana*)
 Western spotted skunk (*Spilogale gracilis*)
 Striped skunk (*Mephitis mephitis*)
 Black-tailed jackrabbit (*Lepus californicus*)
 Desert cottontail rabbit (*Sylvilagus auduboni*)
 Coyote (*Canis latrans*)
 Kit fox (*Vulpes macrotis*)
 Chipmunk (*Eutamias sp.*)
 Desert woodrat (*Neotoma lepida*)
 Badger (*Taxidea taxus*)
 Mouse (*Peromyscus sp.*)
 Red fox (*Vulpes vulpes*)
 Long-tailed weasel (*Mustella frenata*)

Reptiles

Gopher snake (*Pituophis catenifer*)

where guzzlers have been installed.

Wild turkey research

Danny Raymer, a Brigham Young University PhD candidate, is studying whether wild Rio Grande turkeys can survive in Utah's dry pinyon-juniper (PJ) forests simply by adding guzzlers to these areas. There is somewhere between 40 to 60 million acres of PJ woodlands in the West. Rio Grande turkeys might do well in these habitats because they have abundant food resources, including pine nuts. Utah alone has 9.1 million acres of PJ habitat. This PJ habitat makes up 58 percent of Utah's forest cover. These arid PJ forests generally lack the water that many wildlife species, including wild turkeys, need to expand their range. So far, Raymer's study indicates that Rio Grande turkeys released in PJ areas that do not have manmade water sources have a lower adult survival rate than turkeys released in areas that do have guzzlers.



Wildlife Resources uses automated trail cameras to monitor wildlife use at any time, day or night.

Chukar research

Randy Larsen, a Utah State University PhD candidate, is evaluating how guzzlers affect chukar partridge, an important upland game bird in Utah. Many species use guzzlers, but growing populations of wildlife by developing water sources is more complicated than it might seem.

Chukars are a good example. Biologists originally thought they could place guzzlers anywhere in chukar habitat and the chukars would find and utilize them. Unfortunately, Larsen has found that many guzzlers installed to benefit chukars are not used at all. Of 36 small game guzzlers in three areas of western Utah evaluated during the summer of 2004, only 18 (50 percent) were used by chukars. Chukars seem to have very specific security cover requirements in the areas immediately around a guzzler or spring. Water sources that lack appropriate shrub cover are underutilized by chukars, and in many cases, they're not used at all.

Doves, on the other hand, made use of all of the 36 guzzlers evaluated during summer 2004. Doves do not have

specific requirements for shrub cover immediately around a water source. Clearly, species-specific requirements for cover need to be identified and considered before guzzlers are installed.

Chukars generally use guzzlers during the summer and early fall, when the temperature is the hottest and the moisture in the plants is the lowest. However, recent discoveries indicate that in some areas of Utah, chukars are able to obtain moisture from succulent plant sources, such as wild onion bulbs that retain moisture year round. This behavior frees chukars in some parts of Utah from the need to drink water and forces wildlife managers to carefully consider areas where guzzlers should be built in the future.

Other questions of interest include the home range of chukars and their daily movements, particularly the movements of females with young-of-the-year chicks. The answers to these questions are important in helping biologists determine how far they should space guzzlers apart. Should guzzlers be spaced five, three, one, or less than one mile apart to help chukars the most?

How far should they be spaced for antelope and mule deer?

Ideally, guzzlers should be placed in areas where chukars raise their chicks so the chicks will have easier access to the water. Surprisingly, information that adequately identifies appropriate brood habitat for chukars is lacking. This question is especially important to chukars because they're persistent nesters. They'll often hatch chicks as late as August, when the average daily temperatures are among the highest of the year.

Now you know

Because they're so important to wildlife during critical times of the year, the specific location of guzzlers is protected under Utah law. However, a map is available at www.wildlife.utah.gov/pdf/guzzlermap.pdf that shows general guzzler distribution and densities throughout Utah.

Hundreds of guzzlers have been constructed across Utah. After reading this article, the next time you're afield and come upon an odd-looking contrivance full of water, you'll know what the heck a guzzler is! 🐾

Species photographed at guzzlers (all types)

Native birds

Chipping sparrow (*Spizella passerina*)
Lark sparrow (*Chondestes grammacus*)
Dark-eyed junco (*Junco hyemalis*)
Western tanager (*Piranga ludoviciana*)
Scott's oriole (*Icterus parisorum*)
Mourning dove (*Zenaidura macroura*)
House wren (*Troglodytes aedon*)
Rock wren (*Salpinctes obsoletus*)
Western meadowlark (*Sturnella neglecta*)
Golden eagle (*Aquila chrysaetos*)
Cooper's hawk (*Accipiter cooperii*)
Black-billed magpie (*Pica hudsonia*)
Pinyon jay (*Gymnorhinus cyanocephalus*)
Western scrub jay (*Aphelocoma californica*)
Northern flicker (*Colaptes auratus*)
Lazuli bunting (*Passerina amoena*)
House finch (*Carpodacus mexicanus*)
Spotted towhee (*Pipilo maculatus*)

Gambel's quail (*Callipepla gambelii*)
Horned lark (*Eremophila alpestris*)
Common raven (*Corvus corax*)
Brown-headed cowbird (*Molothrus ater*)
Bullock's oriole (*Icterus bullockii*)
Loggerhead shrike (*Lanus ludovicianus*)
Northern mockingbird (*Mimus polyglottos*)
Sage thrasher (*Oreoscoptes montanus*)

Exotic birds

Rock dove (*Columbia livia*)
Chukar partridge (*Alectoris chukar*)

Native mammals

Mountain lion (*Puma concolor*)
Bobcat (*Lynx rufus*)
Mule deer (*Odocoileus hemionus*)
Antelope (*Antilocapra americana*)
Western spotted skunk (*Spilogale gracilis*)

Black-tailed jackrabbit (*Lepus californicus*)
Desert cottontail rabbit (*Sylvilagus auduboni*)
Coyote (*Canis latrans*)
Kit fox (*Vulpes macrotis*)
Least chipmunk (*Eutamias minimus*)
Desert woodrat (*Neotoma lepida*)
Bighorn sheep (*Ovis canadensis*)
Badger (*Taxidea taxus*)
Pinyon mouse (*Peromyscus truei*)
Long-tailed weasel (*Mustella frenata*)

Exotic mammals

Red fox (*Vulpes vulpes*)

Native reptiles

Gopher snake (*Pituophis catenifer*)
Western yellow bellied racer (*Coluber constrictor*)
Great basin rattlesnake (*Crotalus viridis*)

Dedicated Hunter reminders

By JILL WEST

Volunteer Program Coordinator

The start of the year is an important time for members of Utah's Dedicated Hunter program and those who want to join it.

Please check the following items to see which ones pertain to you:

Dedicated Hunter permit valid for four hunt seasons

Did you know that in addition to hunting the general archery, muzzleloader and rifle buck deer seasons, your Dedicated Hunter permit also allows you to hunt during the extended archery season? Utah has three extended archery units: the Wasatch, Ogden and Uintah. To participate in the extended archery hunt, all you have to do is complete the archery

ethics course at wildlife.utah.gov/huntereducation/extended_archery and carry your archery course completion certificate with your license when you go hunting. Be sure to check the boundaries and season dates for each hunt unit. They're listed on pages 51 and 52 of the 2006 *Utah Big Game Proclamation*.

Return unfilled Dedicated Hunter tags by Feb. 16, 2007

If you don't harvest a deer with your 2006 Dedicated Hunter permit, you must return your tag to the Division of Wildlife Resources by 5 p.m. on Feb. 17, 2007, or you'll be credited with a harvest.

We recommend that you bring your unfilled tag to any DWR office and ask for a photocopy of the permit with a "returned" stamp on it. This photocopy will serve as your receipt.

If you can't return your tag in-person, you can mail it to this address: Division of Wildlife Resources, ATTN: Dedicated Hunter program, P.O. Box 146301, Salt Lake City, UT 84114-6301.

The DWR cannot guarantee that the Postal Service will deliver your permit to the DWR, so you may want to consider sending it via certified mail. Check with your local postmaster for delivery options.

All of the tags received before the



Feb. 16 deadline will be included in the special Dedicated Hunter Limited Entry drawing. Results of the drawing will be posted online in April 2007.

Submit hunt region changes by Feb. 16, 2007

If you'd like to switch your Dedicated Hunter region for the 2007 hunt, you must do so in writing by 5 p.m. on Feb. 16, 2007. You can make this change at any DWR office or by mailing a request to the Dedicated Hunter program to the address listed in the section above. To change your hunt region, you must include your full name; your Certificate of Registration (COR) or Social Security number; your date of birth; the region you hunted in 2006; the region you would like to hunt in 2007; and the signature of the Dedicated Hunter whose information will be changed. You can make multiple requests on the same sheet of paper, but full information, including signatures, is required for each dedicated hunter who is requesting a hunt region change.

Enroll in the Dedicated Hunter program Jan. 17 to Feb. 16, 2007

If you or someone you know would like to join the Dedicated Hunter program in 2007, now is the time to do it! All you need to do is complete the following steps:

1. Complete the Dedicated Hunter course online at wildlife.utah.gov/dh. Once you're on the site, click on the "Joining the Program" link and begin the 30-question conservation course. When you're finished, print your conservation course completion certificate. (If you can't print the completion certificate, write on a piece of paper the number



on the certificate and the customer identification number associated with the certificate.)

2. Once you've completed the conservation course, download and print the three-page application form.

3. Fill out the application by hand, and bring it and the conservation course completion certificate (or certificate number and customer identification number) to a DWR office. You can also mail the forms, plus your payment, to: Division of Wildlife Resources, ATTN: Dedicated

Hunter program, P.O. Box 146301, Salt Lake City, UT 84114-6301.

If you decide to mail your application, please mail it early so it has plenty of time to arrive at the DWR's Salt Lake City office by 5 p.m. on Feb. 16, 2007. Once your application is processed, we'll mail your COR and an orientation letter to you.

If you have any questions about the Dedicated Hunter program, please visit wildlife.utah.gov/dh or contact your local DWR office. 🦌

By CRAIG McLAUGHLIN
Big Game Coordinator

Antler gathering

A fun springtime activity for hunters of a different breed

With each passing spring, more and more Utahns find themselves participating in a grown-up version of an Easter egg hunt.

The prizes they're after are much bigger than eggs, though—they're looking for antlers shed by deer, elk and moose during the past winter.

An activity for everyone

Shed antler gathering is an excellent way for folks of all ages to enjoy wide-open spaces, get some exercise and spend some quality time with family and friends.

Searching for shed antlers on a sunny spring day is a great outing that

can result in prizes that are powerful symbols of the bulls or bucks that carried them. Just holding an antler in your hands can stir exciting thoughts about the lives of these impressive animals!

People gather antlers for many reasons. Some are passionate hunters who are hoping to find a memento of the big buck or bull that outsmarted them the past season. Others are looking for a tro-

phy for their mantle. Artisans are looking for antlers that they can craft into rustic drawer pulls, lamps or furniture. In addition to the enjoyment that comes from creating a work of art, shed-antler gathering provides artisans with a way to gain some additional income.

Shed-antler gathering is a fun hobby that almost everyone can enjoy. No special equipment or training is required, and the collection and possession of shed antlers is not currently regulated in Utah. Elsewhere in the West, antler-gathering seasons have been established to protect big game species and their habitat. Because the interest in this activity is increasing in Utah, the Division of Wildlife Resources and conservation groups have discussed the need to regulate shed-antler gathering in the state.

By following a few simple rules, you can ensure your antler *hunting* trips are safe and enjoyable and that they don't cause stress to big game animals and their habitat. You can also ensure that you remain a good neighbor by respecting the wishes of private landowners and by obeying the laws that govern travel on public lands.

Legal aspects: Antlers that have been shed by a living animal have a rounded base where the antlers were attached to the skull. You can collect and possess these antlers without any documentation.



MARK HADLEY



Ogden resident Rick Bingham is looking forward to the day that his nine-month-old son Hunter can find deer antlers like these.

Do not collect antlers that are attached to skulls, however—the animal that carried them died during the summer or fall, and proof that you collected the antler legally (by legal hunting, or a documentation of purchase) is required to possess them.

If you find skulls that still have their antlers attached, please provide their location to your local DWR conservation officer. He or she may want to investigate the site and the circumstances of the animal's death.

Where: To increase your chance of finding antlers, search areas where big game animals spend a lot of time during the winter. Deer often winter in areas that are protected from severe weather and that have shallower snow. These include south or southwest-facing slopes and lower valleys. Elk and moose can tolerate deeper snow and will frequently

Moose are usually the first of the deer family to part with their antlers; in Utah, bull moose sometimes shed their antlers as early as November, and most bulls have lost their antlers by late January. Mule deer typically shed their antlers in February and March. Elk keep their antlers well into March.

winter at higher elevations. In either case, winter-long concentrations of big game leave lasting signs through the spring: trails of hoof-prints, piles of fecal pellets and browsed shrubs. Antlers are often found lying near items that were obstacles to the animals' travel patterns, such as fence lines or gullies that deer have to jump over and dense brush or trees that may have snagged their loosened headgear.

When: Antler gathering is a spring-time activity. Big game animals drop their antlers during the winter months, which is a very stressful time for them. Bucks and bulls are often weak after the fall breeding season, and in the winter the cold temperatures and snow begin to take their toll. The animals must subsist on browse that is less nutritious than the lush, green vegetation they ate in the summer, and although they travel less in the winter to conserve their resources, they still lose body weight. By early spring, their body condition is the worst it will be all year.

To minimize stress that could weaken or even kill big game animals, exercise restraint and do not enter wintering areas until the animals leave them. Each spring, as soon as the snow melts and the grasses and forbs begin to sprout, big game animals move upslope to take

advantage of this new food. This is the time that vacant wintering areas become key spots to search for discarded antlers.

In southern Utah, the snow usually melts by mid-April. Farther north, antler gatherers must wait until mid-late May for deer and elk to leave their wintering areas. Prime antler-gathering periods stretch from just after the snow melts to the time that the grass reaches about a foot in height and begins to hide shed antlers from view.

How: To find antlers, all you need is a good pair of eyes, patience and the willingness to walk across some of Utah's most beautiful and wild places. Many antler gatherers use off-highway vehicles (all-terrain vehicles, jeeps, trucks and snowmobiles) to get into the backcountry.

Antlers are temporary status symbols for male members of the deer family. The animals use these boney projections that grow from the top of their skulls to establish dominance during the fall breeding period. Antlers begin to grow in the early spring, nourished by a rich blood supply in a fuzzy skin called velvet. Antler growth is very rapid during the spring and summer, and the new antlers are soft and are easily injured. By early autumn, the antlers harden and the velvet dries. The animals scrape the velvet off their antlers by raking them against brush, low-hanging branches and tree trunks. This scraping activity polishes and stains the antlers. It also strengthens the animal's neck muscles for upcoming shoving bouts he'll have with other males that he'll compete against for breeding rights.

Following breeding, declining hormone levels in the animal's body cause its antlers to loosen and drop (shed) over the winter. Within weeks, the annual process starts again. As it matures, an individual buck or bull generally grows larger sets of antlers each year. The antler size of older animals often deteriorates as the animal's body condition declines, however.

Some of Utah's big game animals, including bighorn sheep, bison and Rocky Mountain goats, have horns instead of antlers. Horns differ from antlers in that they consist of a sheath of compressed hair (called keratin) over a boney core. Horns are permanently attached to the skull and are not shed annually. There is one exception, however—pronghorn antelope. Pronghorn are the only horned animal in North America that shed their horn sheaths every year. They shed these hollow sheaths during the winter, and you may encounter them during your shed-antler searches in the spring. Pronghorn antelope horns can be legally possessed in Utah.

If you decide to use an OHV, remember to stay on established trails. Going off-trail is illegal and could result

in a fine, or worse. Riding OHVs off of established trails also destroys habitats that antler-bearing big game animals rely on throughout the year.

An OHV may increase the area that you can search in a day, but the increased speed you'll be traveling will reduce the thoroughness of your search and will cause you to miss antlers that you would have seen otherwise. A very effective technique is to slowly walk and search small areas of cover, looking for the brown and ivory of the tines.

General guidelines:

1. Minimize disturbance to big game. Wait until after the snow melts to search for antlers in the spring. If you encounter a group of deer, elk or moose, retreat quietly. Do not ride OHVs into or near areas with herds, and never chase animals.

2. If you must drive unpaved roads

and trails to get to antler-gathering sites, wait until after the byways have dried out and firmed up—traveling these roads too soon will cause ruts and damage them. Worse yet, you might get stuck and face a long day trying to get your vehicle out of the mud.

3. On public lands, travel only on trails that are marked open to travel. Obtain permission from landowners before entering private property, and respect the wishes of landowners by traveling and parking where they request you to.

4. Respect area closures. During the winter, the DWR closes portions of several wildlife management areas because they're important big game wintering areas. The Bureau of Land Management also closes wintering areas to vehicle travel for several months to minimize disturbance to wildlife. 🐾



MARK HADLEY

Like most hobbies, antler gathering can become addictive. Rick Bingham shows the 88 antlers he's found since 2002.

Utah's desert dwellers

Living in a land of climate extremes

"...the dry and sunlashed desert, is a good school in which to observe the cleverness and infinite variety of techniques of survival under pitiless opposition. Life could not change the sun, or water the desert, so it changed itself... The desert has mothered magic things."

—John Steinbeck
Travels With Charlie, 1962

This past summer sure seemed hot and dry in Utah. It reminded many of us that we truly live in a desert.

To cope with the heat, many of us stayed inside, turned our air conditioners on full blast and downed a lot of cool, refreshing beverages right out of the refrigerator.

Not all of Utah's residents got to enjoy the luxury and convenience of air-conditioning and refrigerators, however. The plants and animals that live in Utah's deserts have developed various ways to tolerate the challenges of living in a land of extremes.

BY DIANA VOS
Project WILD Coordinator

Hot and cold deserts?

Most people think that all deserts are hot. Most deserts are, but eight of the world's 21 deserts are actually classified as cold deserts because they regularly receive snowfall in the winter.

So what makes a desert a desert? Though all deserts have different plant and animal life, and they're all different in their size and location, they share two common characteristics: all of them are dry and they have a high rate of evaporation. Deserts generally receive less than 10 inches of rainfall per year. They evaporate more than that, however, which makes them very dry.

North America has four deserts: the Great Basin, Mohave, Sonoran and Chihuahuan. Portions of two of these deserts, the Great Basin and the Mojave, are located within Utah.

Great Basin Desert

The Great Basin Desert is the largest of North America's deserts, covering about 190,000 square miles. It's bounded on the west by the Sierra Nevada and on the east by the Rocky Mountains.

A series of valley floors, called basins, run across this large expanse of land at an elevation of about 4,000 feet. These basins include smaller north-to-south mountain ranges that parallel each other. These ranges are usually 7,000 to 10,000 feet high, but some of their peaks reach more than 12,000 feet. About 35 to 50 percent of Utah's land falls within the Great Basin Desert.

The Great Basin is a cold desert. Even though you might think the region's high mountain ranges would capture great amounts of moisture, the Great Basin is in the *rain shadow* of the even higher Sierras. The Sierras capture most of the moisture from the Pacific winds and prevent it from reaching the area. Annual precipitation averages four to 10 inches, but most of the precipitation that falls in the Great Basin (60 to 80 percent) falls in the form of snow that melts in the spring. Much of the precipitation the region receives quickly evaporates in the dry desert environment. Some of the precipitation that doesn't evaporate sinks into the ground and becomes groundwater. The rest runs into streams and collects in short-lived lakes on the valley floors called *playas*, that eventually evaporate. The Great Basin is literally a basin (or actually a series of basins) since the water that falls in the region never flows out to the ocean.

Summer temperatures in the Great Basin are hot, but not excessively hot, only occasionally reaching 100° F. Overall, temperatures average 45 to 55° F.

Much of the Great Basin Desert (45 percent of it) is covered by sagebrush. Saltbrush dominates in the lower valleys and in the *playa* regions where salts have accumulated in the soils. In the wetter regions to the north, the proportion of grasses to shrubs increases, giving rise to a vegetation type known as *sagebrush steppe*. Other shrubs in the region include Mormon tea, greasewood, blackbrush, snakeweed and rabbit brush.

As the elevation increases on the slopes of the various mountain ranges, the vegetation changes to open woodlands that consist of Utah juniper, single-

leaf pinon (mostly in the southern areas) or curl-leaf mountain mahogany (in the northern areas), followed by bands of coniferous forests and peaks of bristlecone pine.

Mojave Desert

Covering about 54,000 square miles, the Mojave Desert (also spelled Mohave) is the smallest of North America's deserts. It extends from southeast of the Sierra Nevada in California to the Colorado Plateau and is bounded on the north by the Great Basin Desert and on the south by the Sonoran Desert. In Utah, the Mojave Desert is found only within the extreme southwestern corner of the state.

The Mojave Desert is characterized by parched mountains that rise abruptly from alternating plains or basins. Elevations range from 300 feet below sea level to 11,000 feet above. Within Utah, the elevation of the Mojave ranges between 2,500 and 3,500 feet.

Classified as a hot desert, air temperatures in the Mojave Desert sometimes reach 115° F in the summer, and ground temperatures can get as high as a searing 140° F! Precipitation, which falls mostly as rain in the winter, averages only five inches per year, making the Mojave the driest of all of North America's deserts.

Though very hot and very dry, the Mojave Desert supports an amazingly diverse array of unique and fascinating plants. Valleys are filled with widely spaced creosote bush, Mojave sage and mesquite. Other shrubs include shadscale, brittlebush, desert holly, white burrobush and various yuccas. Several cacti, including chollas, barrel cacti, prickly pear and beaver tail cacti, are scattered throughout the desert. In the spring, following the winter rains, a vast array of wildflowers carpet the desert floor.

About one-fourth of the Mojave's plants are endemic to the region, meaning they're found nowhere else in the world. These include the Joshua tree, among the most famous of the region's species. A species of yucca, the Joshua tree is found along the edges of almost the entire Mojave Desert, and also along the southeastern margin, mainly on cooler, moister slopes.

Desert plants

Desert plants use several strategies to survive the limited moisture and extreme temperatures their desert environment provides.

Water hoarders

Many desert plants can store water. Called succulents, these plants store water in their fleshy leaves, stems or

roots. Most succulents also have shallow roots that can quickly absorb water from rain and dew. Cacti and agave are two examples of succulents.

Many desert plants retain water by employing crassulacean acid metabolism (CAM), a different type of photosynthesis that allows them to make food during the day, without wasting water.

During normal photosynthesis, plants open microscopic holes in their leaves during the day. Called stomata, these leaves allow carbon dioxide (CO₂) to enter the plant and oxygen (O₂) to exit it. However, when plants open their stomata, water can escape, especially in the heat of the day.

In CAM photosynthesis, the plants take CO₂ in by opening their stomata at night, when it's cooler. The CO₂ they take in is stored in the form of crassulacean acid. As the next day begins, and the temperatures rise, the crassulacean acid is transformed back into CO₂ for use in photosynthesis.

The waiting game

Another strategy desert plants use is called drought dormancy. This strategy allows plants to survive periods of drought by conserving water through reduced metabolism. During this process (also called *idling metabolism*) the plant slows its metabolism down by recycling CO₂ and using stored water, just enough to keep the plant alive. Because their metabolism is *idling*, these plants can start full-speed metabolism faster, when the conditions are right for growth and reproduction, than plants that become completely dormant.

To avoid losing water, many desert plants drop their leaves during drought or times of extreme heat. Examples of plants that do this are mesquite, acacia, palo verde, ironwood trees, creosote and ocotillo.

"But if they drop their leaves, how do they photosynthesize?" you might ask. Some don't photosynthesize. Instead, they remain dormant until they can grow new leaves. Ocotillo, for example, may bloom, produce seeds, lose leaves, go dormant and then re-grow



Though water is scarce, desert plants find ways to thrive.

leaves, repeating this cycle up to five times in a year. Others have chlorophyll not only in their leaves, but in their stems or bark too. This allows them to photosynthesize without leaves.

Store water or stay wet

Avoiding drought is another strategy some desert plants employ. Annuals such as desert sand verbena and desert paintbrush avoid drought by growing only during the spring season. These desert plants dry up and die during the summer, but moisture, oil, fat, sugar and protein are stored in their seeds. The seeds are protected by a thick coating. That coating is nearly waterproof and contains anti-germination chemicals. When enough rain falls, the chemicals that prevent germination are washed away, the seed germinates, a new plant grows and the plant starts producing seeds. Since rain doesn't always fall every year, these annuals are more aptly called ephemerals. When the rain comes, they're the sprinters of the plant world, sending out flower stalks and blooming in just a few days.

Long, deep taproots are another way plants avoid drought. Long taproots can reach below ground to the water table, where an almost constant source of water is available. This water keeps the plant alive throughout the hot and dry season. Mesquite and other phreatophytes utilize this strategy. The taproots of these two plants average 60 feet long.

Waxy or oily coatings that many plants have on their leaves and stems is another way that plants retain water. Creosote and jojoba are two examples of this. These waxes and oils, which are shiny, also reflect light and reduce the temperature of the leaves. Salt excretions on leaves can increase albedo (reflectivity) too. Cooler leaves lose less water.

Other plants create their own shade through hair-like projections (trichomes) on their leaves. Having small leaves or no leaves, as mentioned before, also reduces the loss of water because the leaves have a smaller surface area. Cacti, for example, have no leaves. The spines of cacti also help reduce water loss by providing shade and collecting moisture.

Desert wildlife

The limited water in the desert determines the types of organisms that can live in them and drives the adaptations these organisms must possess to survive. Animals that live in the desert use a variety of intriguing strategies to minimize the amount of water they lose and to tolerate the extreme heat.

If you can't stand the heat, get out of the kitchen

Many desert birds avoid the heat by limiting their activity to dawn and to within a few hours of sunset. During the hottest parts of the day, they retire to a cool, shady spot. Others, such as kingbirds, remain active during the day, but regularly perch in the shade to stay cool.

Certain desert lizards also stay active. They move fast over the hot desert sands, stopping in cooler areas provided by shade. Some lizards, including colored, zebra-tailed and leopard lizards, have long legs and toes that lift their body high off the ground and reduces the amount of heat they absorb. Sidewinders stay cool by moving sideways. This sideways movement results in only two short portions of their bodies touching the scorching sand at any one time. White-tailed antelope ground squirrels make their own shade by using their bushy tail to shield their body from the sun.

A variety of desert animals, including rodents, kit foxes and tarantulas, escape the high temperatures by burrowing below the surface of the ground. When the temperatures drop at night, they come out to hunt. Some rodents keep the hot air out by plugging the entrances to their burrows. Other desert animals remain in their burrows during long periods of extreme temperatures and drought. Some ground squirrels even enter a state of aestivation and remain dormant through the hottest part of the summer.

Desert tortoises retreat to long, underground burrows they've dug to escape the summer heat. They also spend the cold of winter deep within their burrows in a dormant state. Gila monsters also spend about 95 percent of their life



LYNN CHAMBERLAIN

Tortoises use burrows to stay cool.

in a dormant state. Desert bighorn sheep sometimes retreat into caves in the rocky foothills to escape the heat.

Spadefoots remain dormant deep underground until the summer rains fill the ponds. Raindrops hitting the ground stimulate the toads to emerge, breed, lay eggs and feed to replenish their body reserves. They do all of this in a very short period of time before burying themselves again in the cooler, moister ground. The ability to rapidly produce young is an adaptation that helps ensure successful breeding before the small, temporary pools dry up.

Some spadefoot tadpoles, including tadpoles of the Great Basin spadefoot in Utah, also develop into two morphs (forms). One form feeds on vegetative matter and detritus and requires more time to grow. The other develops faster and becomes carnivorous, sometimes turning to cannibalism to ensure they survive as the pools disappear. Some species of arthropods, such as fairy shrimp, don't survive as the pools dry up, but their eggs do. Their eggs hatch in new ponds and playas that form when the rain falls at a later time.

Keeping your cool

Desert animals use some clever

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Jackrabbits release heat through the large surface area of their ears.

mechanisms to dissipate the heat they absorb from their surroundings. For example, owls, poorwills and nighthawks pant. This panting causes water in their throats and mouths to evaporate, and that cools them off. They need to have a good supply of water to cool down this way, though.

Jackrabbits stay cool through their large ears. Their ears are laced with blood vessels that carry warm blood to the surface of their skin, which allows them to cool as they rest in the shade. When temperatures reach stressful or dangerous levels, researchers have found that some jackrabbits will actually aim their large, highly vascularized ears at the center point of the north sky, towards Polaris. Even though this star cannot be seen during the day, they somehow know where to aim their ears. The heat sink associated with this extremely cold portion of the sky *pulls* excessive heat from their ears and cools their bodies.

In deserts, having a light color is often an advantage, and many desert animals are paler in color than similar species are in other regions. Pale colors not only absorb less heat, they also provide camouflage that makes it difficult for predators to see the animal in the desert landscape.

Turkey vultures, which are dark in color and absorb heat more readily, counteract the heating by excreting waste onto their legs and feet. As the moisture from the waste evaporates, much of their body

heat is carried away. Turkey vultures also spend time soaring high on thermals of cooler air to avoid hot midday temperatures.

Getting water however you can

Finding water to drink in the desert can be tricky. The desert tortoise's solution is to dig catch basins in the soil to catch the periodic rains that fall. The tortoises remember where the basins are and return to them when it rains.

Some desert animals get water from the foods they eat. For example, the desert tortoise, the desert iguana and the chuckwalla get most of the water they need by feeding on moist plants. The desert tortoise can also store about a quart of water in its bladder. If it's disturbed, it may void its bladder as a defense mechanism. This loss of water can be fatal to the tortoise.

Rattlesnakes and other desert snakes absorb most of their moisture from their prey. Many insects tap fluids, such as nec-

tar or sap, from the stems or the various parts of the plants they eat. This insect life, in turn, supplies moisture to lizards and birds, including roadrunners and bats, which feed on the insects. Hummingbirds and nectar-feeding bats get the water they need in the nectar they drink from flowers. The larvae of the tarantula wasp get moisture from the helpless tarantula their mother has paralyzed, laid her eggs upon and placed in the nest.

Kangaroo rats can even get moisture from the dry seeds they eat. They make water metabolically through the process of digestion. They also have special kidneys, with a great number of microscopic tubules, which extract most of the water from their urine and return it to their blood. Specialized tissue in their nasal passages also recaptures much of the moisture they would normally lose when they exhale air. They also seal off their burrows to block out the midday heat and retain the small amount of moisture that they do exhale through their breathing.

As you can see, Utah's desert plants and animals have found ingenious ways to deal with the extreme heat and limited water in their desert environments. 🐾

Getting WILD! Utah's WILD Notebook is produced by Utah's Project WILD program. WILD workshops, offered by the Utah Division of Wildlife Resources, provide teachers and other educators with opportunities for professional development and a wealth of wildlife education activities and materials for helping students learn about wildlife and its conservation. For a current listing of Project WILD educator workshops, visit the Project WILD web site at wildlife.utah.gov/projectwild or e-mail DianaVos@utah.gov.

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